PadhAI: MP Neuron & Perceptron

One Fourth Labs

Perceptron Learning - Will it always work

Will this algorithm always work?

1. It will only work if the data is linearly separable
2. If it is not linearly separable, the algorithm will never converge (ie, predict all training examples correctly)
3. Linearly Separable: Two sets P and N of points in an n-dimensional space are called absolutely linearly separable if
   a. n+1 real numbers $w_o, w_1, \ldots w_n$ exist such that
   b. Every point$(x_o, x_1, \ldots x_n) \in P$ satisfies $\sum_{i=1}^{n} w_i x_i >= w_0$
   c. Every point$(x_o, x_1, \ldots x_n) \in N$ satisfies $\sum_{i=1}^{n} w_i x_i < w_0$
4. If the sets P and N are finite and linearly separable, the Perceptron learning algorithm will converge in a finite number of steps